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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,775	01/12/2004	Michael Ronald Miller	140525	1774
23413	7590	12/12/2007		
CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002			EXAMINER RAMIREZ, JOHN FERNANDO	
			ART UNIT 3737	PAPER NUMBER
			MAIL DATE 12/12/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/707,775

Applicant(s)

MILLER ET AL.

Examiner

John F. Ramirez

Art Unit

3737

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-18, and 20-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 19, 2007 has been entered.

### ***Response to Arguments***

Applicant's arguments filed 08/20/07 have been fully considered but they are not persuasive. Accordingly, claims 6 and 19 have been canceled.

The amendment to claims 1, 8, 9 and 14 where the sensor is a "linear position encoder", applicant alleges that the Ariav et al. reference does not provide any teaching of: "generating a measurement signal indicative of an amount of displacement of the plastic cord during respiration by the person utilizing the linear position encoder coupled to the end of the plastic cord". The examiner of record disagrees with applicant's assertions because in Figure 5 of the Ariav et al. reference, **the respiration is measured by using either an accelerometer type sensor as illustrated in FIG. 4 (measures linear acceleration of a body), or the displacement-type sensor of FIG. 3 (measures linear position)**. Therefore, previous rejections with respect to these claims still stand.

With respect to claims 21 and 22, allowability has been withdrawn and claims have been rejected in view of indefiniteness of the claims in question.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 21 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 21 and 22 are directed to generate a measurement signal by a sensor and lacks clarity as to how this measurement signal is generated and therefore does not further limit the system.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

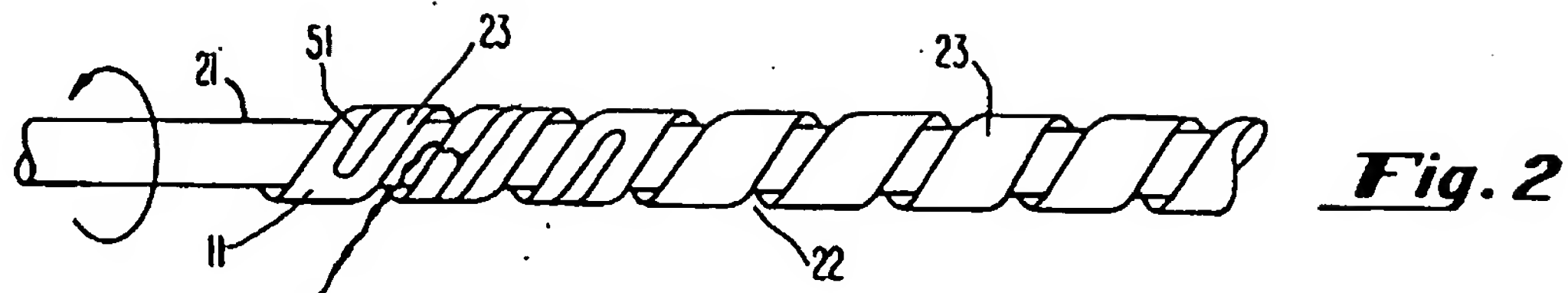
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made:

Claims 1, 6, 9, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ariav et al. (2006/0087325) in view of Bowers (5,207,230).

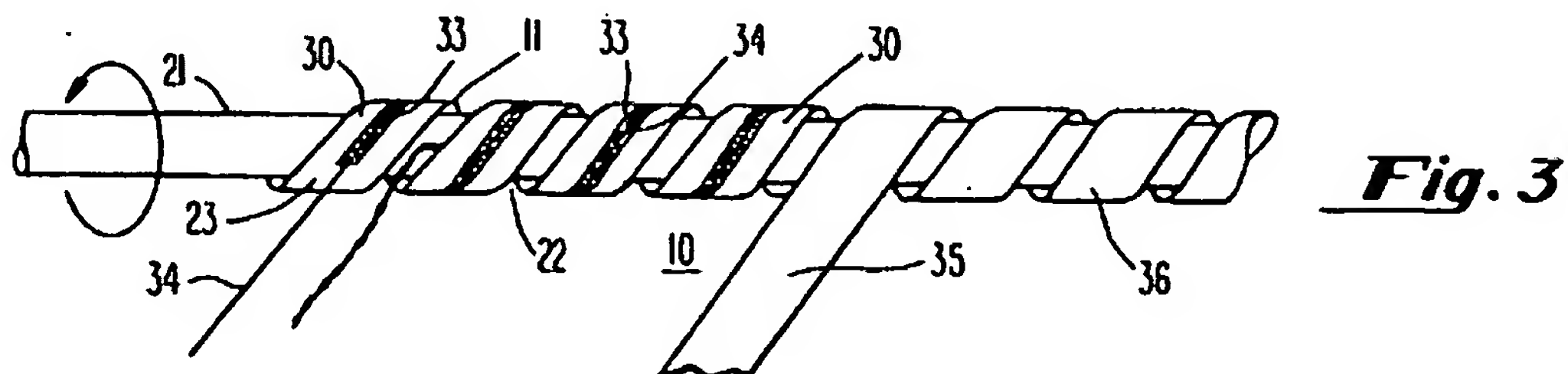
Ariav et al. discloses an application of a sensor attached to an elastic band useful for X-ray imaging (paragraph 0061 and see figure 5) designed to be placed on the chest

of a person to measure or detect the respiration or cardiac cycle rate of the person (see paragraphs 0160, 0162, 0080, 0081). Ariav et al. does not explicitly teach that the plastic cord or elastic band being substantially transparent to x-rays, a sensor coupled to an end of the plastic cord, the end of the plastic cord being configured to be disposed away from the chest of the person, and the sensor generating a measurement signal indicative of an amount of displacement of the plastic cord during respiration by the person. In the same field of endeavor Bowers discloses a sensor that has a PVDF transducer film attached substantially along a polyethylene spiral cord device with separate and independent sensing elements which is particularly adapted to monitor respiration or diaphragmatic effort around the chest generating an output signal (col. 4, lines 12-40, col. 1, lines 5-12, see figure 1a).

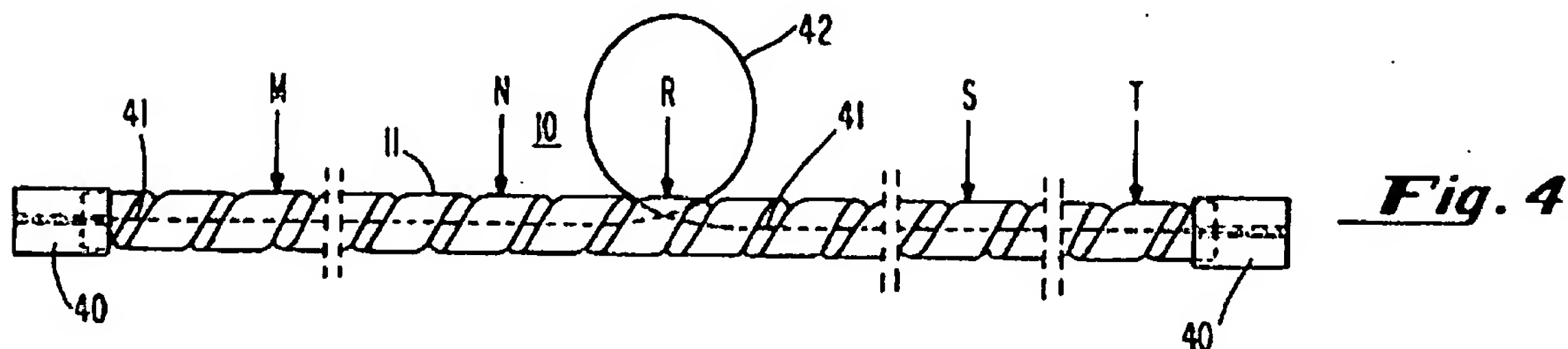
Additionally, in response to applicant's arguments, that the sensor is coupled to an end of the plastic cord, and the end of the plastic cord being configured to be disposed away from the chest of the person is conventional in the art as evidenced by the Bowers Patent.



**Fig. 2**

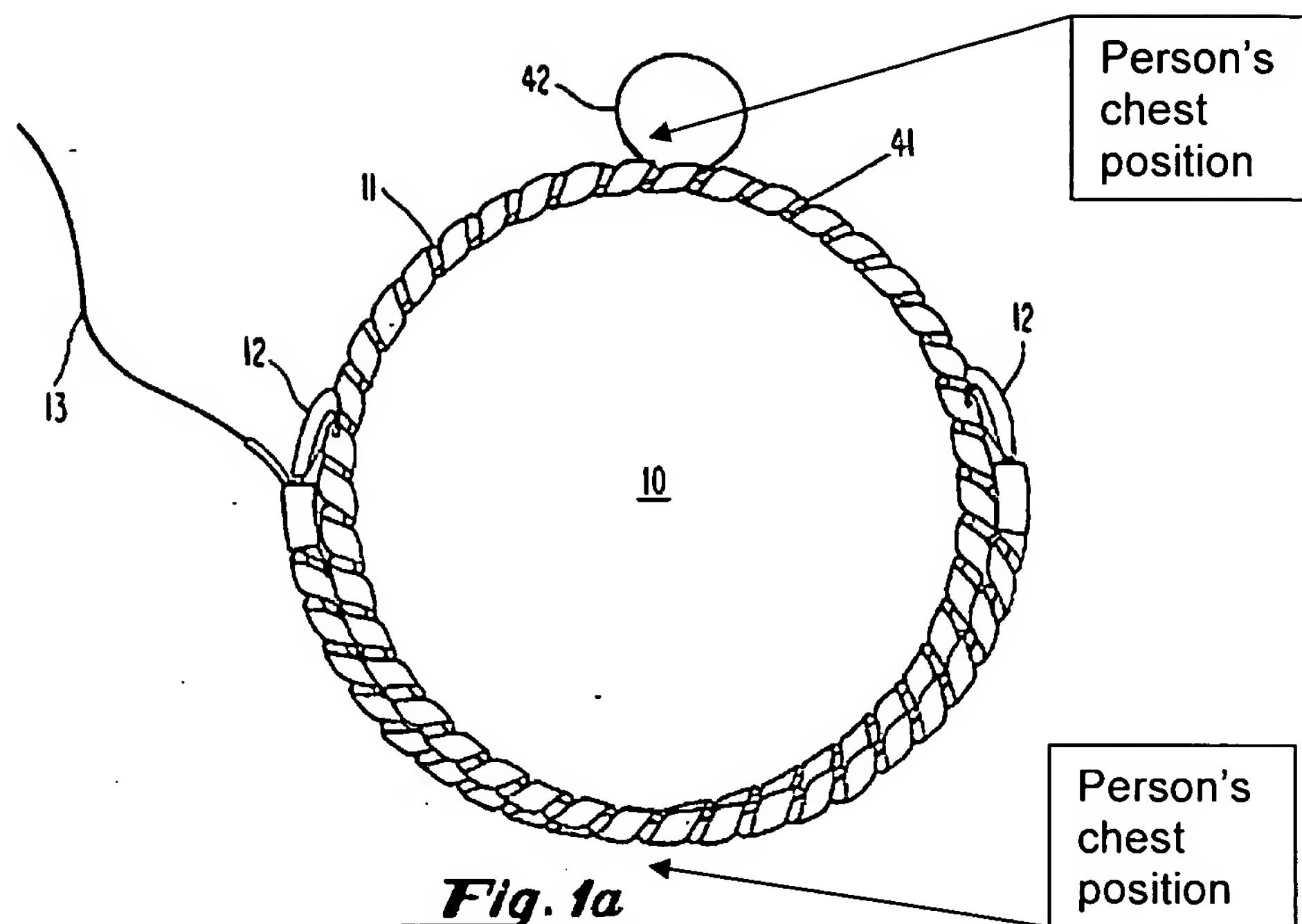


**Fig. 3**



**Fig. 4**

Figures 2, 3 and 4 above, illustrate the conventionality of the sensor is coupled to an end of the plastic cord. Additionally, the specification in column 5, lines 30-55, and in column 5, lines 7-29), expressly discloses a sensor that is coupled to an end of the plastic cord.



Figures 1a and 1b, illustrate the conventionality of the end of the plastic cord being configured to be disposed away from the chest of the person. In the specifications in column 4, lines 52-64, expressly discloses the end (12) of the plastic cord being configured to be disposed away from the chest of the person. As it can be seen from Figure 1a, the end (12) of the plastic cord (10) is disposed away from the chest. The position of the chest is either on the upper or lower portion of the spiral cord.

Based on the above observations, for a person of ordinary skill in the art, modifying the device disclosed by Ariav et al., with the above discussed enhancements would have been considered obvious because such modifications would have a great effect in minimizing artifacts and interference in the recording of the signal by the sensing element.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 4, 5, 10, 11, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ariav et al. in view of Bowers (US 5,207,230) and in further view of Zomer (US 5,235,989). Ariav et al., teaches all the limitations of the claimed subject matter as applied to claims 1, 9 and 14, except for mentioning specifically a plastic cord comprises a polypropylene string, a plastic tube configured to be placed across the chest of the person, the plastic cord being disposed in the plastic tube.

However, a plastic cord comprises a polypropylene string, a plastic tube configured to be placed across the chest of the person, the plastic cord being disposed in the plastic tube are considered conventional in the art as evidenced by the teachings of Bowers (US 5,207,230) and Zomer (US 5,235,989).

The Bowers and the Zomer patent teaches a plastic cord comprises a polypropylene string (see Bowers, figures 1-4, col. 2 lines 20-68) (see Zomer, figures 1-6, 11, col. 4, lines 39-46), a plastic tube configured to be placed across the chest of the person, the plastic cord being disposed in the plastic tube (see Bowers, col. 4, lines 10-51).



Based on the above observations, for a person of ordinary skill in the art, modifying the system disclosed by Ariav et al., with the above discussed enhancements would provide a high quality output signal indicative of true respiratory effort with minimum artifacts.

2. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ariav et al. in view of Bowers (US 5,207,230), further view of Rasche et al. (US 6,865,248) and in further view of Sontag et al. (US 6,298,260). Ariav et al., teaches all the limitations of the claimed subject matter as applied to claim 1, except for mentioning specifically a device for generating a visual indication of respiratory function of the person based on the signal, and wherein respiratory function comprises a lung volume level.

However, a device for generating a visual indication of respiratory function of the person based on the signal, and wherein respiratory function comprises a lung volume level are considered conventional in the art as evidenced by the teachings of Rasche et al. (US 6,865,248) and Sontag et al. (US 6,298,260).

The Rasche et al. and Sontag et al. patent teaches a device for generating a visual indication of respiratory function of the person based on the signal (see (see Rasche et al. figures 3-5) (see Sontag et al. figure 5). Moreover, Sontag et al. teaches wherein respiratory function comprises a lung volume level (see abstract, figs. 3-5, element 26).

Based on the above observations, for a person of ordinary skill in the art, modifying the system disclosed by Ariav et al., with the above discussed enhancements

would provide an accurate output signal by minimizing inaccuracies in the assumed spatial position of the tissue volume arising from displacements induced by the patient's respiration.

***Allowable Subject Matter***

Claims 21 and 22 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John F. Ramirez whose telephone number is (571) 272-8685. The examiner can normally be reached on (Mon-Fri) 7:00 - 3:30 p.m.

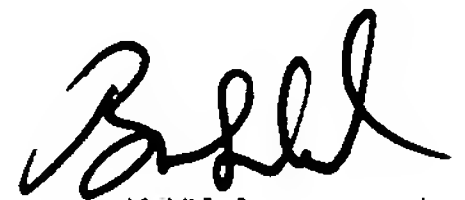
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on (571) 272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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JFR

A handwritten signature in black ink, appearing to read "Bell", is located in the lower right quadrant of the page. Below the signature, there is a faint, rectangular stamp that is mostly illegible but appears to contain the word "RECEIVED" and some numbers.